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UNIVERSITY OF ALBERTA

PREDICTABILITY OF TEACHERS' PERCEPTIONS: THE PRINCIPAL'S IMPACT

BY

BRUCE McINTOSH

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of Master of Education.

DEPARTMENT OF EDUCATIONAL ADMINISTRATION

EDMONTON, ALBERTA

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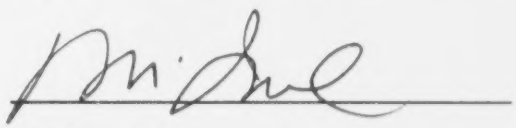

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Date: 6 October 1994

Abstract

This study was designed to determine the extent to which the previous perceptions of elementary school teachers about the school, and the school district, could be used to predict the future perceptions of those teachers. A key assumption in the study was that the perceptions of staff are directly affected by the leadership of the principal. Utilizing the annual results from a total staff survey conducted from 1981 to 1983, and from 1985 to 1993, in 133 schools, factor analysis resulted in one set of questions that measured staff feelings of connection with the district, and a second set that measured staff feelings of connection with the school. Based on these factors, a four quadrant model was used to classify principals according to whether the average percentage of their staff's responses were above, or below, the average percentage of the total district staff response. A group of 39 principals with a strong association with one of the quadrants over at least three years was identified. The discriminant analysis procedure was applied, and a prediction function was developed to predict both the first and second most likely quadrant for the remaining principals. As well, the actual results of all principals were charted. Both the charted data, and the discriminant analysis, provide strong evidence that there are patterns in the attitudes of a principal's staff, and that future perceptions of staff can be predicted from previous perceptions.

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CHAPTER 1

Introduction

In 1979 Edmonton Public Schools commenced a systematic process to measure the perceptions of staff, students, and parents about their schools and the school district. The perceptions were gathered using one-page questionnaires administered in the May-June period of each year. Parents were surveyed every year until 1983, and have been surveyed every two years since 1985. No groups were surveyed in 1984. The surveys of students and parents are samples sufficient in size to be significant at each school. All staff have the opportunity to complete the survey. Consequently, the district has a data base, developed over 14 years, that provides a longitudinal measure of the perceptions of staff, students, and parents about their school, their principal, other administrative staff in the organization, the board of trustees, and the district.

Purpose of the Study

The study was designed to determine the extent to which the current and previous perceptions of staff predict the future perceptions of staff. A key assumption in the study is that the attitudes of staff are directly affected by the leadership of the principal, and that without a change in leadership, or a change in the leadership behaviour of the principal, the profile of staff perceptions will continue, relatively unchanged, from year to year, regardless of

changes in the individuals making up the staff.

The survey was not used in its entirety. Based on the author's familiarity with the survey, and a belief that certain questions related to the school while others tended to relate to the district, questions from the survey were selected based on whether they appeared to provide an indication of the staff's feelings of connection with the school, and their feelings of connection with the school district. Those questions related to the school were deemed to be a measure of the climate of the school. Those related to the district, and the responses to them, were felt to be a measure of the extent to which staff shared, and felt a commitment to, the culture of the school district.

Research related to the demonstrated impact of leadership is as notable by its sparsity as theories about leadership are noted for their volume. Though increasing somewhat in the past few years, there is little in the literature, except a small number of studies related to the effects of coaching changes on amateur and professional basketball and football teams, that seriously attempts to quantify the impact that a leader has on an organization. The researchers suggest that sports teams have been an obvious focus for study because they provide a measure of performance related to wins and losses that are readily accepted as indicators of the effects of the leader, or derive from changes in leadership. In general, these studies either seek to measure the performance of the current leader, or more often are characterized as studies of administrator

succession, and are based on the view that, given current knowledge of the success of the organization, a change in leadership should result in a different level of performance.

Research Problem

To what extent can previous perceptions of staff about the school and the district be used to predict future perceptions of staff?

Research Questions

1. Which questions from the staff attitude survey provide the greatest measure of the impact of the principal's leadership?
2. To what extent do differences exist between the perceptions of teachers and principals about the school and the school district?
3. To what extent do some principals more frequently generate staff feelings of connection with the school than do other principals?
4. To what extent do some principals more frequently generate staff feelings of connection with the district than do other principals?
5. To what extent do patterns of staff perceptions exist that would provide a basis for describing principals according to a predictable set of staff perceptions of school and district connections?

Significance of the Study

Few public school systems have developed the base of staff perceptual data that is available within Edmonton Public Schools. Research related to climate and culture in schools and school systems, and the effects of the leadership of principals on the perceptions of staff, has generally provided results at a point in time, or for a sample of schools within a system. The research has not had the benefit of data about individual schools, the people in them, and the school district of which they are a part, gathered over a number of years. Edmonton Public Schools uses the survey data on an annual basis to monitor the performance of each school and the district. The district also uses the data to track trends in the attitudes of those surveyed. The district has not used the data to determine whether there is a valid basis for making predictions about the future perceptions of a principal's staff based on previous perceptions of that principal's staff. If such prediction were possible, the district, and the principal, would be in a position to take action to see that unwanted future results are averted, and that valued results are preserved or enhanced.

Assumptions

In addition to the fundamental assumption that the attitudes of a school staff are directly affected by the leadership provided by the principal, it was further assumed that school systems, principals, and teachers would prefer to maximize positive feelings of staff toward both the schools, and the school district. It was also assumed that

the questions selected from the yearly staff survey were a measure of staff perceptions, and that staff responses to the questionnaire items fairly represented their feelings.

Delimitations

The study was delimited to the results of yearly attitude surveys completed by teaching staff in elementary schools in one school system during the periods 1981-1983 and 1985-1993. No attempt was made to relate the responses of teachers to characteristics of principals such as age, gender, training, length of experience, tenure in the school, leadership style, or to the characteristics of those who were immediate supervisors of the principals. No attempt was made to characterize the teaching staff according to age, gender, training, experience, or tenure in the school. The study did not attempt to characterize either the students or the parents according to socio-economic status, or other generally recognized variables.

Limitations

The study was limited by the extent to which the selected questions were a valid measure of the feelings of connection staff have to the school and to the school district. The study was also limited by the nature of the source data. The original responses to each of the questionnaires was not available. Instead, the source data for the analyses were the percentage of positive and negative responses to each of the questions. As a result, calculations which summarized responses over time, or summarized responses to groups

of questions, were limited to the average of positive responses. In addition, although there were two alternatives for positive responses, these were combined to provide one value for the percentage of positive responses. It is quite possible that two different staffs could be reported as having the same degree of positive response to a question, with one staff expressing a "very positive" attitude, and the other a "positive" attitude. And finally, the study was limited by the author's knowledge of the full range of statistical procedures available, and skill in the interpretation of data derived from the statistical procedures utilized.

CHAPTER 2

Review of the Literature

The importance of leadership in organizations, and the means through which leadership is exercised, are major themes in organizational studies. More recently, researchers have sought to find the means to demonstrate, through measurable results, the actual impact of leaders within various organizations. It is generally accepted that the success of an organization is directly related to the quality of leadership found within the organization. However, it is not the quality of leadership itself that determines the success of the organization, but the interplay of the skills and attitudes of the leader, the skills, attitudes and needs of the staff, and the goals and requirements of the organization that either enhance or subvert the success of the enterprise. Adler's description of the leader (Seldes, 1985) provides the essence of leadership theory:

> In Aristotelian terms, the good leader must have **ethos, pathos,** and **logos**. The **ethos** is his moral character, the source of his ability to persuade. The **pathos** is his ability to touch feelings, to move people emotionally. The **logos** is his ability to give solid reasons for an action, to move people intellectually. (p. 8)

Systems Theory and Organizational Behaviour

Contemporary views of organizational behaviour are rooted in systems theory, derived from the biological sciences, where the behaviour of organisms is intimately related to the environment.

The environment can affect the behaviour of organisms, and the behaviour of the organism can impact the nature of the environment. Systems can be viewed as either closed or open. At one extreme, a closed system is operating when changes in the environment have no impact on the organism. A pure open system is characterized by a free exchange between the organism and the environment in which it lives. The application of systems theory to education is based on the view that schools and school systems are open systems, influenced by the community in which they operate, and with the ability to influence and change that community. Organizational studies of schools generally focus on the behaviours of individuals within the school and the relationships between those behaviours and the organizational environment in which they occur.

Systems theory development has been aided by an increasing understanding of the roles people play in an organization, and the impact those roles have upon other members within the organization. Getzels and Guba (1957) identified the interdependent nature of these relationships:

> We conceive of the social system as involving two major classes of phenomena, which are at once conceptually independent and phenomenally interactive. There are, first, the institutions with certain roles and expectations that will fulfill the goals of the system. Second, inhabiting the system are the individuals with certain personalities and needs-dispositions, whose interactions comprise what we generally call "social behaviour". (p. 426)

The relationship between the institution's defined roles and

expectations, and the individuals within the organization, are further explained by studies related to the motivation of individuals, and studies of human needs. A primary issue for researchers has been to determine the extent to which the behaviour of individuals within an organization is related to the requirements of the organization and the individual's role within the organization, and the extent to which that behaviour is attributable to the needs and personality of the individual? Juran (1964) referred to the split personality of a manager as comprising both the duties of the manager, and drives of the person.

Further development of systems theory added the concepts of "structure" and "technology" to the constructs of tasks, and the needs of people within the organization. Each of these elements interacts on a continuing basis. For example, the tasks and structure of the organization affect the behaviour of people within the system, at the same time that the behaviours of the individuals serve to change both the tasks and the structures within which they are accomplished.

Contingency theory overcame the difficulties encountered with earlier theories that attempted to explain behaviour through either an organizational view or a human relations perspective. In essence, contingency theory suggests that what works well in one organization, or one part of an organization, may not work well in another. The optimum solution is one that meets both the requirements of the organization and the needs of individuals within

the organization, all within the context of the requirement to meet the demands of the broader environment.

Leadership

The focus on leadership by researchers and practitioners in organizations is the consequence of a shared belief that the qualities of leaders, and the impact of leadership, are critical factors in the success of organizations. At one time, researchers focused on identifying those characteristics of leaders that would enable organizations to select individuals with the necessary attributes to provide leadership within the organization. This notion that leaders shared common traits proved to be of limited value. Researchers have, more recently, focused on the concept and exercise of leadership so as to more clearly understand and describe the way in which it functions. Bennis (1989) expressed the frustration felt by many when he asked why it is so difficult to provide leadership, at the same time that people desperately want it. He suggested that our beliefs in the past two to three decades have changed from a commitment to the shared goals of the larger society, to a belief in the overriding importance of individual goals. Bennis concluded that this change has rendered it impossible to achieve the consensus necessary for anyone to successfully lead a group of people.

Leadership theories generally focus on two factors: the work of the group that is directed towards achieving the goals of the organization, and the internal workings of the group. The basis for

the behaviour of the leader in an organization can range from the vested authority of the leader granted by position, and bestowed by the organization, to the power granted to the leader by those being led. As in all open social systems, the leader's behaviour is influenced by both subordinates and superordinates, and the leader can influence the behaviour of both subordinates and superordinates. The leader's influence on the group results from the development of working relationships within the group that are productive and directed toward accomplishing goals. Halpin (1966) described these two dimensions as "initiating structure" and "consideration." Other researchers and theorists have utilized these same concepts, often applying other terms to the two dimensions. Blake and Mouton (1964) used the terms "concern for people" and "concern for production" in developing their Managerial Grid. The grid is a standard display of a two-factor relationship that allows an examination, within four extremes of possible relationships, and the more likely reality of actual relationships within those extremes. Thus, a particular leader's behaviour could be characterized, at the extremes, as either

High concern for people, and High concern for production, or
High concern for people, and Low concern for production, or
Low concern for people, and High concern for production, or
Low concern for people, and Low concern for production.

Blake and Mouton suggested that the most effective leaders are aware of, and responsive to, both the needs of the group and the

individual members within the group, while ensuring that the group is totally directed toward the achievement of organizational goals.

Likert and Siepert (1973) identified factors that can be influenced by the leader in developing the internal workings of the organizational unit. These include the organizational climate, the nature of supervisory leadership, and the structure of the organization. The authors suggested that these factors shape the attitudes and behaviour of those working within the organization, and that those behaviours will determine the organization's success in achieving its goals.

Owens (1987) presented four assumptions that prevail in examining leadership behaviour:

> 1. Leadership is describable in terms of styles of behaviour that leaders use in relating to groups.
> 2. A key issue is the extent to which leader behaviour should be directive (authoritarian), on the one hand, or participative democratic), on the other hand.
> 3. There is no one, universal, best way to exercise leadership under all conditions; it is necessary, therefore, to use some system for assessing the situational contingencies in selecting a style of leader behaviour.
> 4. In selecting a leadership style (for example, to be directive or participative), the appropriate criterion is effectiveness (for example, which style produces the greatest organizational effectiveness?). (p. 261)

These assumptions are derived from the work of a number of researchers and theorists. Fiedler (1974) concluded that there is no one optimum leadership style. Instead, there are particular

situations that suit one style more than another. As well, there are particular motivations of leaders that determine the style a leader chooses to use. Fiedler's Least Preferred Co-Worker (LPC) Scale measured the orientation of the leader toward either the task at hand or the interpersonal relationships within the social system. Fiedler also provided a means of analyzing the situation within which the leader operated by examining the nature of the relationships between the leader and the members of the group, the extent to which the situation is known, or structured, and the power of the leader's position. Fiedler (1967) concluded that

> Leadership performance depends then as much upon the organization as it depends upon the leader's own attributes. Except perhaps for the unusual case, it is simply not meaningful to speak of an effective leader or an ineffective leader; we can only speak of a leader who tends to be effective in one situation and ineffective in another. If we wish to increase organizational and group effectiveness we must learn not only how to train leaders more effectively but also how to build an organizational environment in which the leader can perform well. (p. 261)

Vroom and Yetton (1973) utilized the concept of situational variables in their studies of the nature of participation in the decision-making process in organizations. They concluded that there is no one correct leadership style. Authoritarian, consultative, and consensual leadership styles are each appropriate, given a particular set of circumstances. Each style can provide quality decisions, with sufficient support from staff that they can be implemented. The seven situational variables described by Vroom and Yetton relate to

the quality requirements of the decision itself, the nature of the relationships between the supervisor and staff, and the degree to which staff support the goals of the organization.

Hersey and Blanchard's (1977) Situational Theory of Leadership focused on determining the maturity of the staff in relation to the task at hand as an important factor in selecting a leadership style. They regarded maturity as being related to the group's skill and willingness to set high but realistic goals and to its willingness and ability to take responsibility for the achievement of goals. Grove (1985, p. 61) used the term "task relevant maturity" in this same context to describe the functioning of managers in new, or rapidly changing work situations. He argued that it is the responsibility of the manager's supervisor to assist the manager to alter the supervisory style, that was effective in the past, when the new task is unknown to the staff member and will require a different style of supervision to ensure the success of the manager.

Transactional and Transformational Leadership

There is much current interest in an emerging model related to transactional and transformational leadership. Van Eron and Burke (1992), citing Burns, provided a summary of the characteristics of these two leadership styles:

> Concerned with change, the transformational leader communicates and focuses attention on a clear vision of future conditions that address the needs and values of the organization and of the leader's individual followers. The transactional leader focuses on maintaining the

> status quo of organizational functions by clarifying roles and tasks and managing complexity. Transactional leaders work within the existing organizational culture, norms and beliefs and relate to followers primarily by an exchange or transaction. (p. 149)

Leader Effects

The belief that the qualities and skills of leaders affect the achievements of organizations is generally accepted. The success of researchers in documenting those achievements, and the differences achieved by different leaders using different leadership styles in the settings of schools and school systems, is not as apparent. Agreement on the results expected of the schools, and the measures related to those results, is difficult to achieve. In addition, the complexity of the schools in terms of the variables that affect their achievements render simple cause-effect equations to be generally unacceptable. Further difficulties are encountered when much of the research is conducted over a limited time period. Pitner, (cited in Johnson & Holdaway 1991), identified the need for longitudinal studies of the effects of leaders on organizations.

In another context, Svyantek and DeShon (1992) examined the results achieved by Lee Iacocca following his move from Ford to Chrysler. Using measures related to sales, and other profit-dependent variables, the authors concluded that "Analyses overwhelmingly suggest that Iacocca's move from Ford to Chrysler neither adversely affected Ford's performance not did it improve Chrysler's performance relative to the other auto makers" (p. 297).

Administrator Succession

The literature contains a limited number of studies relating the impact of a change in leadership on the results of the organization, a field of study generally called administrator succession. Allen, Panian, and Katz (1979) suggested that problems in comparing organizations made studies more difficult and identified sports teams as an alternative to be considered :

> One of the recurrent problems in organizational sociology is the comparability of different organizations. Organizations vary considerably in terms of their size, goals, internal structures, and external environments. Professional baseball teams have the advantage of being highly comparable on each of these variables. (p. 168)

Eitzen and Yetman (1972) studied the historical records of college basketball teams and concluded that

> coaches of previously successful teams (those winning half or more of their games) were found to be less successful than their predecessors. On the other hand, coaches hired at schools where the previous team had won less than 50 percent of their games, tended to improve on the previous year's record. (p. 113)

Brown (1982) found similar results in a study of teams in the National Football League over the period 1970-1978. Rowan and Denk (1984) designed a study on the premise that "if principals affect achievement through their unique management styles, or behaviour, academic performance in the same school should change when schools change principals" (p. 518) Their longitudinal study showed that a change in principal did not affect basic skills

achievement until the second year, and that the effects of the change differed depending upon the socio-economic status of the students. They also concluded that there was a negative effect in high SES areas, but that the effect became more positive as the SES declined. Rowan and Denk suggested that "investigations of leadership effects in educational settings need to be longitudinal in design and sensitive to potential interaction effects in the data" (p. 520).

Organizational Culture and Climate

Owens (1987) characterized "culture" as the behavioural norms, assumptions, and beliefs of an organization. He described "climate" as the perceptions of persons in the organization that reflect those norms, assumptions, and beliefs. The importance, and development, of organizational culture has received increasing attention over the past 10 years. Ouchi (1981), Peters and Waterman (1982), Deal and Kennedy (1982), Bennis (1990), Sergiovanni (1990), and Senge (1990) deal with similar themes. The culture of an organization consists of the fundamental purposes of the organization, its philosophies and beliefs, its operating procedures, and the basic assumptions it makes about how its business should be conducted. In order for any organization to achieve its goals, the structure and beliefs of the organization must match the needs and beliefs of those working within the organization. Organizations need to shift from the belief that people regard their work as separate from their lives, to an understanding that people want their work to be an integral part of their lives. People want to feel they are working for a cause

that is truly worth their investment. They want to be proud of what they do, the contribution they make, and the results they, and the organization, achieve.

Lewin, (cited in Owens, 1987), first expressed the view that behaviour is a function of the needs of the individual and the structure and requirements of the environment. The most effective way to change the behaviour of individuals is not to attempt to change their innate needs, but to change the environment in which they operate. Senge (1990) asserted that most organizational problems are not the result of inadequate people, but flawed structures within which those people are expected to do their work.

In order to change people's view of the value of their work, and to secure their commitment to that work, organizations are altering the ways in which work is arranged. That is, the environments within which work is accomplished are being changed. These changes to the structure of organizations, the structure of work, and the fundamental beliefs that organizations have about the individuals working within them, have brought about dramatic changes in the culture of organizations.

Assessing Climate in Schools

As stated above, the culture of a school system consists of the norms and beliefs of the organization. The climate of a school is measured by the perceptions of those working in, or served by, the school in relation to those norms and beliefs. Owens (1987) stated that

> The notion of satisfaction is usually closely associated with the concept of organizational climate. That is, to what extent are the perceptions that participants have of the environment of the organization satisfying to them? This association of satisfaction with the perceptions of participants is implicit in some techniques for studying climate whereas many studies have inquired directly into possible discrepancies between the participants' perceptions of the existing state of affairs in contrast to whatever desired state the respondents think ought to prevail. (p. 169)

Kanter (1983) described successful organizations as those in which people feel connected to the enterprise. Less successful organizations are characterized by a feeling of isolation from the larger purposes of the organization, and from the decisions made by the organization.

Mowday, Steers, and Porter (1979) characterized commitment as an attitude, and made a distinction between commitment and job satisfaction:

> as an attitude, commitment differs from the concept of job satisfaction in several ways. To begin with, commitment as a construct is more global, reflecting a general affective response to the organization as a whole. Job satisfaction, on the other hand, reflects one's response either to one's job or to certain aspects of one's job. (p. 226)

The socialization of members within the organization is heavily influenced by the norms of the group. These group norms are the agreed rules of behaviour, accepted as legitimate by the members of the group. Clearly, the greater the extent of acceptance by the group, the greater the influence on new members of the group to accept the

prevailing norms.

The initial study of climate in school settings was conducted by Halpin and Croft (1962). Their procedure, and two other methods for assessing and analyzing climate are described below.

Organizational Climate Description Questionnaire (OCDQ)

Halpin and Croft (1962) began with the assumption that the perceptions of teachers within a school were a valid measure of the climate of the school. They focused on the teachers' perceptions of the teachers as a group, and the teachers' perceptions of the principal. They identified four categories to describe the teacher group, including cohesiveness among teachers, commitment to school goals, morale, and feelings of interference in their work. Four factors were identified related to perceptions about the principal, including the example set by the principal, consideration for the staff, the social relationships with the teachers, and the emphasis placed on achieving results. Halpin and Croft, based on their initial study of 71 schools, concluded that there was a relationship between the way teachers viewed the principal and the ways in which they viewed themselves as a group. Generally, where the principal was viewed positively, teachers viewed the teacher group as committed and achieving the goals of the school.

Organizational Climate Index (OCI)

The evolution of this measure began with George Stern's view, based on the work of Lewin, that personality results from the

interaction of the needs of the individual and the environment. In order to understand the climate of an organization it is necessary to know both the individual's needs and the environmental factors within the organization that lead to changes in the behaviour of the individual consistent with the needs of the individual.

Beginning with studies of post-secondary institutions, Stern developed two measures, one to assess the need structure of individuals, the second to measure the effects of the organization. Utilizing the concept of needs press, the OCI yields measures related to development press, that is, the extent to which the climate of the organization supports the intellectual and interpersonal development of staff, and control press, which characterizes the organizations emphasis on rules and standard procedures. In effect, similar to the concepts of task orientation and consideration of individuals postulated by other researchers. The results of the questionnaire, completed by staff, provide a two-dimensional profile of the school relating the degree of perceived development press against the perceived degree of control press.

Profile of a School (POS)

Developed by Likert and Gibson in 1968, the POS is designed to gather perceptions about the interaction-influence system within the school and the school system. These internal factors are comprised of leadership processes, motivational forces, communication processes, decision-making processes, goal-setting processes, and control processes. The results from the questionnaire are plotted to

provide a profile of the perceptions of those included in the sample or census.

Likert's linking pin model of organizations provides a framework for analyzing the work group in combination with other groups within the organization. Likert's belief is that it is critical that groups are able to link upwards in the hierarchy of the organization. Likert (1961) stated that

> The capacity to exert influence upward is essential if a supervisor (or manager) is to perform his supervisory functions successfully. To be effective in leading his own work group, a superior must be able to influence his own boss, that is he needs to be skilled both as a supervisor and as a subordinate. (p. 144)

Research Summary and Implications

The research and opinion related to the importance and impact of leadership bears directly on the role of the principal. As the acknowledged leader in the school, whether viewed as the line supervisor of the teachers, or as the principal-teacher in the collegial sense, school districts, teachers, students, and the community ascribe to the principal the role and obligations of leadership. The exercise of that leadership is governed by the same factors as is leadership in any organization. The range of leadership skills, knowledge, and styles is likely as broadly distributed among principals as in leaders in other fields. What the research provides is a framework for understanding both the function and exercise of leadership. As leadership theory has developed, the importance of the leader in

attending to both the operational requirements of the organization, and the particular human needs of both staff and clients, have been accentuated. The leader who can establish an environment in which staff feel personal fulfillment while embracing the greater purpose of the organization, and finding a true sense of accomplishment in achieving that purpose, is prized.

The measure of leadership is found in both the achievement of the primary purpose of the organization, and in the feelings of staff toward their own well-being and contribution. It is not sufficient to maximize staff satisfaction if the purposes of the organization are not being achieved. Nor is it sufficient, indeed it is unlikely, that the purposes of the organization are being achieved by a staff whose feelings of contribution and well-being are minimized.

Both achievement of purpose, and staff feelings of satisfaction, are measurable, as is the impact of the leader in producing the results associated with those measures. And, there appear to be particular behaviors, effective in particular situations, that are more likely to produce necessary results. The organization that wishes to capitalize on the research, and indeed contribute to the refinement of that research, must first establish the measures, and then use those measures to analyze both the exercise of leadership, and the contribution of its leaders in enhancing, or detracting, from its necessary results.

Ulmer (1992) focused the issues surrounding leadership theory and practice, and argued for the essential focus of research:

> The ultimate questions are not about leadership characteristics or behaviours, or even about the essential integrating concepts that would place leadership in context. Most fundamental is the question of "Leadership for what purpose . . . for what impact?" It is not the optimum process - - however critical that may be - but the optimum impact that counts. (p. ix)

CHAPTER 3

Design of the Study

The Data

The data for the study were the results of surveys of the perceptions of elementary school principals and their teaching staffs gathered by the Edmonton Public Schools in each of the years 1981-1983 and 1985-1993. The one-page questionnaire, Appendix A, provides two response alternatives for positive perceptions (very much, fairly much), and two response alternatives for negative perceptions (not very, virtually none). For purposes of the study, the two positive response alternatives were combined to provide the percentage of staff expressing a positive response to each of the questions in each of the years.

The Subjects

The general design of the study proceeded through four phases beginning with an overview of the results of the surveys for the selected questions from 1981 to 1993, for both teaching staff and principals. The second phase utilized factor analysis to determine the number of factors that would adequately represent the data. The third phase produced a classification of staff response types, and produced a summary of the proportion of principals classified according to each type. The fourth phase involved the use of discriminant analysis to develop an algorithm that could be used to predict the future pattern of perceptions for a principal's teaching

staff based on the previous perceptions of the principal's staff. Confidentiality of information related to schools and principals was maintained. The information which was utilized in the study was available to the researcher by virtue of his work responsibilities within the district. The results of 133 schools and 254 principals were included in either a portion or all of the period under study. A summary of the principals, by years of service, and the number of schools in which each served, is provided in Table 1.

Methodology

The Survey

Of the total number of questions asked on the survey, 22 were selected for use in the study. Those questions, and both the short form, and an abbreviated form, used for reference throughout the study, were as follows:

1. Do you feel there is good communication throughout the district? ("district communication") (COMM-D)
2. Do you feel there is good communication in your school? ("school communication") (COMM-S)
3. Do you feel you get support when you need it from your associate superintendent? ("associate support") (SUP-AST)
4. Do you feel you get support when you need it from the superintendent of schools? ("superintendent support") (SUP-SPR)
5. Do you feel you get support when you need it from your

Table 1

Number of Years as Principal and Number of Schools Served

Number of years as principal	Number of schools served						
	1	2	3	4	Total	Mean	Mode
1	25				25	1.00	1
2	13	5			18	1.28	1
3	20	1			21	1.05	1
4	27	5			32	1.16	1
5	9	3	1		13	1.38	1
6	10	13	1		24	1.62	2
7	10	11	1		22	1.59	2
8	4	14	6		24	2.08	2
9	4	7	3		14	1.93	2
10		3	7	1	11	2.82	3
11	1	5	8	1	15	2.60	3
12	2	2	12	1	17	2.71	3
13	2	7	6	2	17	2.47	2
Total	127	77	45	5	254		
Mean	4.12	7.51	10.51	11.80			
Mode	4	8	12	13			

principal? ("principal support") (SUP-PRN)

6. Do you feel you get adequate recognition and appreciation for your performance and accomplishments? ("recognition") (PRF-RCG)
7. Do you feel your assigned work responsibilities are fair and reasonable? ("assignments fair") (WRK-ASG)
8. Do you feel that the district's goals, philosophies, and policies are communicated clearly? ("goals communicated") (DGL-COM)
9. Do you feel that the district's goals, philosophies, and policies are implemented consistently? ("goals implemented") (DGL-IMP)
10. Do you feel that the district's goals, philosophies, and policies are consistent with your personal goals and beliefs? ("goals consistent") (DGL-CON)
11. Do you have confidence in your associate superintendent? ("associate confidence") (CONF-AS)
12. Do you have confidence in the superintendent of schools? ("superintendent confidence") (CNF-SPR)
13. Do you have confidence in the board of trustees? ("board confidence") (CNF-BRD)
14. Do you have confidence in your principal? ("principal confidence") (CNF-PRN)
15. Do you feel that the district is a good place to work? ("district work") (GDWRK-D)
16. Do you feel that your school is a good place to work? ("school

work") (GDWRK-S)

17. Do you feel you as an individual have adequate influence over district level decisions that affect you and your job? ("influence district") (INFLU-D)
18. Do you feel you as an individual have adequate influence over school level decisions that affect you and your job? ("influence school") (INFLU-S)
19. Are you satisfied with your influence in the budget planning process? ("influence budget") (INFLU-B)
20. Are you satisfied with the staff performance evaluation process in your school? ("performance evaluation") (PRF-EVL)
21. Do you feel that you have adequate opportunities for professional development? ("pd") (PROF-DV)
22. Do you feel that the workload in the school is distributed equitably and fairly among staff? ("work fair") (WRK-DIS)

Descriptive Statistics Applied to Survey Results

The percentage of positive responses, the average of the percentage of positive responses, and the standard deviations of the percentage of positive responses for each of the questions for both principals and teachers were calculated in order to determine the extent to which similarities and differences existed in the overall perceptions of the two groups. These descriptive statistics also provided a context within which to understand the overall results of the survey and to provide an overview of the general feelings of

staff within the district.

Factor Analysis of Survey Results

The factor analysis procedure was applied against a matrix comprising up to 1,515 percentages of positive responses for each of the 22 variables, that is, the questions selected from the survey. The elements of the matrix were transformed into standard Z-scores with a mean of 0, and a standard deviation of 1. Missing values for variables were replaced with the mean value of the variable. The factor analysis proceeded in four steps:

1. The appropriateness of the factor model was evaluated. Bartlett's test of sphericity was used to test the hypothesis that the correlation matrix was an identity matrix. The Kaiser-Meyer-Olkin measure of sample adequacy, which is an index for comparing the magnitudes of observed correlation coefficients to the magnitudes of the partial correlation coefficients, was utilized to determine the potential for using a factor model. A measure of sampling adequacy for each individual variable was also calculated.

2. The number, and utility, of the factors needed to represent the data was determined. Principal components analysis was employed to obtain an estimate of the initial factors, by transforming the set of correlated variables to a set of uncorrelated variables, that is, the principal components. The percentage of total variance explained by each of the factors was determined by examining the Eigenvalues for each factor.

3. The factor matrix was transformed to aid in interpretation. In order to enhance the interpretability of the factors produced in step two, the VARIMAX method of orthogonal rotation was applied in order to minimize the number of variables that had high loadings on a factor.

4. The scores for each factor were calculated, and the number of factors necessary to represent the data was determined.

Descriptive Statistics Applied to Principal Groups

Prior to conducting the discriminant analysis procedure, the actual results of the principals' staffs over the period 1981-1993 were charted. The results of the factor analysis were utilized to classify the results according to four distinct types. The average percentage of positive responses and the standard deviation of positive responses were calculated for each of the groups in order to determine the differences that existed between the groups.

Discriminant Analysis Applied to Principal Groups

The study was designed primarily to determine the extent to which the perceptions of staff could be used to predict the future perceptions of a principal's staff, whether in the same school or in a subsequent school assignment. In order to test the hypothesis that previous survey results could be used as a predictor, the results of the factor analysis were utilized to describe a categorization of principals into four groups. A sub-set of the total number of

principals were divided among these four groups based on the stability of their staff's perceptions over at least a period of four years. A total of 39 principals were included in these four groups. Univariate statistics were calculated for each of the groups for each of the 22 variables. Pooled within-groups correlation and covariance matrices were computed. Wilks' Lambda and univariate F-ratios with 3 and 35 degrees of freedom were calculated in order to determine if the group means were different and the significance of the difference. Classification function coefficients, using Fisher's linear discriminant functions, were calculated, as were canonical correlation function coefficients. From these, standardized canonical discriminant function coefficients were determined. A structure matrix was computed, that is, a display of pooled within-groups correlations between discriminating variables and canonical discriminant functions. Each of the canonical discriminant functions was evaluated at group means (group centroids). Utilizing these statistics, and the scores on the attitude survey, the probabilities were calculated for both the first most likely, and second most likely group for a further 176 principals.

CHAPTER 4

Research Findings

The Surveys

An overview of the summary of the results for the period 1981 - 1993 provides a context for the further analysis undertaken in this thesis. Table 2 provides the average of the yearly percentage of positive responses for both principals and teachers, and the standard deviation of the percentages of positive responses, for each of the questions for the period covered by the study.

All but two of the questions were posed to both principals and teachers. Principals did not respond to the questions dealing with support from, and confidence in, the principal. The average percentage of positive responses was higher for principals than teachers for all questions except that dealing with whether responsibilities were fair and reasonable (teacher = 91.2, principal = 85.3).

The average percentage of positive responses for principals and teachers were most similar for questions related to the district as a place to work (teacher = 95.8, principal = 97.5), recognition and appreciation for performance (teacher = 79.7, principal = 81.9), the school as a place to work (teacher = 94.7, principal = 99.3), implementation of district goals (teacher = 72.8, principal = 80.2), and performance evaluation (teacher = 88.6, principal = 96.3).

Table 2

Teacher and Principal Average Percentages of Positive Responses and Standard Deviations of Percentages for Variables

Question	Teachers (range of n: 1779 to 2169)		Principals (n= 133)	
	Average %	SD of %	Average %	SD of %
District Communication	80.0	5.7	93.2	4.2
Associate Support	71.9	5.0	94.2	1.3
Superintendent Support	53.9	9.9	88.6	6.5
Goals Communicated	80.1	9.5	89.3	9.1
Goals Implemented	72.8	10.3	80.2	9.7
Goals Consistent	81.0	5.4	94.1	3.9
Associate Confidence	83.4	6.6	93.6	1.8
Supt. Confidence	71.0	9.1	89.8	7.1
Board Confidence	56.4	12.0	86.1	7.3
District Work	95.8	11.5	97.5	2.8
Influence District	27.9	8.5	64.9	10.3
School Communication	89.4	1.6	99.7	0.7
Principal Support	93.3	0.8	NA	NA
Recognition	79.7	5.8	81.9	6.1
Responsibility Fair	91.2	1.7	85.3	1.9
Principal Confidence	92.2	3.4	NA	NA
School Work	94.7	1.4	99.3	3.4
Influence School	76.6	4.6	98.6	1.0
Influence Budget	83.1	4.2	95.9	1.6
Performance Evaluation	88.6	5.4	96.3	1.2
PD	87.6	2.7	95.3	1.6
Work Equitable	82.5	3.0	94.6	1.8

The average percentages of positive responses for teachers and principals were most dissimilar for questions related to influence over district decisions (teacher =27.9. principal =64.9), support from the superintendent (teacher = 53.9, principal = 88.6), confidence in the board (teacher = 56.4, principal = 86.1), support from the associate superintendent (teacher = 71.9, principal = 94.2), influence over school decisions (teacher = 76.6, principal = 98.6), and confidence in the superintendent (teacher = 71.0, principal = 89.8).

The average percentage of positive responses for principals were highest for questions related to communication in the school (99.7), the school as a place to work (99.3), influence on school decisions (98.6), and the district as a place to work (97.5).

The average percentages of positive responses for teachers were found for questions regarding the district as a place to work (95.8), the school as a place to work (94.7), support from the principal (93.3), confidence in the principal (92.2), and the fairness of their responsibilities (91.2).

The average percentages of positive responses for principals were lowest on questions related to their influence over district decisions (64.9), the implementation of district goals (80.2), recognition of performance (81.9), the fairness of their responsibilities (85.3), and confidence in the board (86.1).

The average percentages of positive responses for teachers were lowest on questions related to their influence over district decisions (27.9), support from the superintendent (53.9), confidence

in the board (56.4), confidence in the superintendent (71.0), and support from the associate (71.9).

An examination of the standard deviation of yearly percentages for each of the questions for both teachers and principals indicates principals' responses were less variable than teachers' responses for 16 of the 20 questions responded to by both groups.

Principals' results showed the least yearly variance in the percentage of positive responses on questions related to communication in the school (SD=0.7), influence on school decisions (SD=1.0), performance evaluation (SD=1.2), support from the associate (SD=1.3), influence over the budget (SD=1.6), professional development opportunities (SD=1.6), the equitable distribution of work (SD=1.8), confidence in the associate (SD=1.8), and the fairness of responsibilities (SD=1.9).

Teachers' results showed the least yearly variance in the percentage of positive responses on questions related to support from the principal (SD=0.8), the school as a place to work (SD=1.4), communications in the school (SD=1.6), the fairness of responsibilities (SD=1.7), and the equitable distribution of work (SD=3.0).

Principals showed the greatest yearly variance in the percentage of positive responses on questions related to influence over district decisions (SD=10.3), the implementation of district goals (SD=9.7), the communication of district goals (SD=9.1), confidence in the board (SD=7.3), and confidence in the superintendent (SD=7.1).

Teachers showed the greatest yearly variance in the percentage of positive responses on questions related to confidence in the board (SD=12.0), the district as a place to work (SD=11.5), the implementation of district goals (SD=10.3), support from the superintendent (SD=9.9), the communication of district goals (SD=9.5), confidence in the superintendent (SD=9.1), and influence over district decisions (SD=8.5).

The highest percentage of positive staff responses for 16 of the 22 questions was found during the three-year period from 1986-1988. The lowest percentage of positive staff response for 12 of the 22 questions was found during the three-year period 1991-1993. Seven questions recorded their lowest value in the first year each was asked. Twelve questions showed an overall increase from the base year to 1993, with 10 showing a decrease. The largest increases in percentage of positive responses were for the questions related to the communication of district goals (+20.28%), confidence in the board (+7.36%), implementation of district goals (+6.79%), and communication in the school (+5.05%).

The Factors

The factor analysis procedure was applied to the 1,515 values for the 22 variables. Bartlett's test of sphericity was utilized to test the hypothesis that the correlation matrix was an identity matrix. The test produced a value of 13,417 and a significance equal to 0.000. Thus, the hypothesis that the population correlation matrix is

an identity matrix was rejected.

The Kaiser-Meyer-Olkin measure of sampling adequacy was utilized as a further measure of the value of using factor analysis. This measure is an index for comparing the magnitudes of observed correlation coefficients to the magnitudes of the partial correlation coefficients. Small values for the KMO measure indicate that a factor analysis of the variables may be unwise, since correlations between pairs of variables cannot be explained by other variables. The measure of sampling adequacy for each of the variables is shown in Table 3. The overall value of the KMO was 0.901, a result described by Kaiser, cited in Norusis (1992, p. 59) as "marvelous", and therefore the factor analysis was determined to be appropriate.

At the second stage of the factor analysis process, an estimate of the initial factors was determined through principal components analysis. The procedure transforms a set of correlated variables to a set of uncorrelated variables, that is, the principal components. The initial statistics resulting from the process are identified in Table 4. The total variance explained by each factor is listed in the column labeled "Eigenvalue". The next column contains the percentage of the total variance attributable to each factor. The last column is the cumulative percentage. As can be seen from Table 4, 62.5% of the total variance is attributed to the first four factors. The remaining 18 factors together account for 37.5% of the variance. It was

Table 3

Kaiser-Meyer-Olkin Measure of Sampling Adequacy for Each Variable

Variable	MSA Value
Associate Confidence	.81712
Board Confidence	.94457
Principal Confidence	.86215
Superintendent Confidence	.80623
District Communication	.96237
School Communication	.93413
Goals Communicated	.87003
Goals Consistent	.95206
Goals Implemented	.91526
District Work	.93287
School Work	.93029
Influence Budget	.95025
Influence District	.93104
Influence School	.95217
Performance Evaluation	.96923
Recognition	.96896
Professional Development	.93183
Associate Support	.79421
Principal Support	.88724
Superintendent Support	.81471
Assignments Fair	.92322
Work Equitable	.93059

Table 4

Principal Components Analysis

Factor	Eigenvalue	Percentage of variance	Cumulative percentage
1	7.90923	36.0	36.0
2	3.54017	16.1	52.0
3	1.20609	5.5	57.5
4	1.09870	5.0	62.5
5	.89552	4.1	66.6
6	.85756	3.9	70.5
7	.71148	3.2	73.7
8	.68249	3.1	76.8
9	.63141	2.9	79.7
10	.55067	2.5	82.2
11	.51309	2.3	84.5
12	.48234	2.2	86.7
13	.43944	2.0	88.7
14	.40839	1.9	90.6
15	.38473	1.7	92.3
16	.35105	1.6	93.9
17	.34055	1.5	95.5
18	.27040	1.2	96.7
19	.25501	1.2	97.9
20	.21806	1.0	98.8
21	.13449	0.6	99.5
22	.11912	0.5	100.0

concluded, at this stage, that a model employing four factors would be examined for its utility.

Table 5 displays the factor matrix for the four factor model. The next step was to determine how adequately the four factor model represents the data. A reproduced correlation matrix, shown in Table 6, was examined. There were 63 (27.0%) residuals (above the diagonal) with absolute values greater than 0.05 and 77% residuals with absolute values less than, or equal to, 0.05. These statistics indicate that the four factor model represents the data very well. The VARIMAX procedure was used to further clarify the data. This method minimizes the number of variables that have high loadings on a factor. The result, displayed in Table 7, indicates that the 22 variables are divided into four groups with strong correlations to one single factor within each group. Values greater than 0.3 have been highlighted to aid interpretation. Examination of Table 7 indicates that the first factor includes those questions that relate primarily to the school. Factor two includes items that relate primarily to the district. The third factor is comprised of the three questions relating to district goals, philosophies and policies. The fourth factor includes the three questions related to work responsibilities, professional development, and workload distribution. For purposes of explanation, the first factor was termed the "school connected" factor; the second the "district connected" factor, the third the "goal congruence" factor, and the fourth the

Table 5

Four Factor Matrix

Question	Factor 1	Factor 2	Factor 3	Factor 4
Goals Implemented	.68445	-.39493	.24810	-.31752
District Communications	.68402	-.33039	.03301	-.13781
Goals Consistent	.67100	-.33089	.20567	-.30617
Influence School	.66942	.39105	.07657	.01772
Associate Confidence	.65591	-.32438	-.33417	-.00864
Associate Support	.65574	-.30665	-.31381	.04836
Principal Support	.64260	.54129	-.24134	-.12507
Recognition	.64147	.20683	.10397	-.05832
Principal Confidence	.62768	.56704	-.28107	-.16039
School Communication	.62165	.55916	-.13855	-.15462
School Work	.59214	.55801	-.19188	-.07897
Goals Communicated	.59062	-.37508	.34013	-.47096
Support Principal	.58272	-.54325	-.24754	.25989
Influence Budget	.57779	.32938	.23585	.07063
District Work	.57775	-.14852	-.06379	.22351
Superintendent Confidence	.56933	-.54410	-.27182	.24671
Performance Evaluation	.55677	.41204	.03448	.05905
Board Confidence	.54032	-.51713	-.00429	.05589
Work Fair	.53759	.19646	.16549	.40587
District Work	.53330	.28028	.27005	.28215
Influence District	.51259	-.30911	.13437	.19108
Professional Development	.37495	.14049	.50095	.33896

Table 6

Reproduced Correlation Matrix for Four Factors

Variables	CNF_ AST	CNF_ BRD	CNF_ PRN	CNF_ SPR	COMM_ D	COMM_ S	DGL_ COM
CNF_AST	.64718*	-.09210	-.06315	-.09599	-.03104	-.04998	.00818
CNF_BRD	.52310	.56251*	.04726	.02704	-.06001	.02770	-.02017
CNF_PRN	.32307	.03815	.82024*	.03897	-.01120	-.03852	-.00139
CNF_SPR	.63863	.60395	.08566	.75493*	-.02335	.03094	-.00690
COMM_D	.54598	.53260	.25482	.52622	.59712*	.03184	-.03722
COMM_S	.27400	.03868	.77101	.04920	.25721	.74221*	-.01243
DGL_COM	.39947	.48531	.13797	.33169	.60405	.18312	.82700*
DGL_CON	.48136	.51567	.22484	.43061	.61728	.25095	.73456
DGL_IMP	.49688	.55525	.18686	.45878	.65060	.21937	.78631
GDWRK_D	.44651	.40174	.26050	.48222	.41135	.25039	.26998
GDWRK_S	.27218	.02779	.75468	.06618	.22522	.71892	.11236
INFLU_B	.19270	.14479	.47182	.10305	.28444	.49976	.26467
INFLU_D	.38993	.44692	.07805	.47064	.43085	.09765	.37440
INFLU_S	.28649	.16014	.61756	.15191	.32878	.62146	.26640
PRF_EVL	.21949	.09091	.56395	.09799	.23770	.56260	.15821
PRF_RCG	.31941	.23594	.50005	.21002	.38191	.50903	.36412
PROF_DV	.03003	.14674	.11984	.08448	.17988	.18983	.17951
SUP_AST	.63402	.51694	.31815	.63741	.53282	.27217	.37280
SUP_PRN	.32763	.06133	.79817	.10608	.26998	.75492	.15332
SUP_SPR	.63891	.61137	.08561	.75874	.53409	.05260	.34133
WRK_ASG	.23007	.21085	.33723	.25432	.25234	.35837	.10896
WRK_DIS	.16620	.15783	.37252	.14733	.24222	.40721	.16882

Table 6 (Continued)

Reproduced Correlation Matrix for Four Factors

Variables	DGL_ CON	DGL_ IMP	GDWRK _D	GDWRK _S	INFLU_ B	INFLU_ D	INFLU_ S
CNF_AST	-.01403	-.01871	-.06244	-.04353	.05012	-.08455	.00083
CNF_BRD	-.04427	-.03377	-.06377	.02908	.00196	-.01930	.00805
CNF_PRN	.00877	.01480	-.02437	-.03329	-.03456	.04854	-.04561
CNF_SPR	.03465	.02828	-.01476	.02113	.01614	-.05935	-.01080
COMM_D	-.07951	-.07661	.01990	-.01601	-.02057	-.04329	-.02510
COMM_S	-.01433	-.00142	-.01782	-.01106	-.04292	.03848	-.03074
DGL_COM	-.09140	-.05004	.04965	.02661	-.03537	-.04225	-.01896
DGL_CON	.69577*	-.05088	.03699	.02051	-.03744	-.03080	-.01781
DGL_IMP	.73819	.78682*	.00597	.01290	-.01503	-.02265	-.02700
GDWRK_D	.35526	.36730	.40988*	.06941	-.02599	-.15629	-.04820
GDWRK_S	.19740	.16239	.25382	.70505*	-.03920	.01618	-.06240
INFLU_B	.30559	.30147	.28564	.47509	.50294*	-.00664	.03425
INFLU_D	.41536	.44559	.37620	.09017	.23954	.41287*	.06157
INFLU_S	.33011	.31712	.32775	.59851	.53489	.23594	.60722*
PRF_EVL	.22627	.20816	.27147	.54832	.46971	.17395	.53752
PRF_RCG	.40123	.40168	.32022	.47991	.45916	.26771	.51722
PROF_DV	.20436	.21781	.23957	.17753	.40500	.28085	.35030
SUP_AST	.46212	.47671	.45522	.27357	.20728	.39799	.29588
SUP_PRN	.24073	.20589	.27830	.73874	.48382	.10574	.62114
SUP_SPR	.44028	.46945	.49123	.06889	.11773	.48302	.16330
WRK_ASG	.20549	.20255	.36157	.36415	.44302	.31463	.45656
WRK_DIS	.23426	.23174	.31232	.39809	.48407	.27693	.49228

Table 6 (Continued)

Reproduced Correlation Matrix for Four Factors

Variables	PRF_ EVL	PRF_ RCG	PROF_ DV	SUP _AST	SUP _PRN	SUP _SPR	WRK _ASG	WRK _DIS
CNF_AST	.01532	-.00332	.09063	.16421	-.05842	-.14424	.00168	.05746
CNF_BRD	.01619	-.02010	-.01700	-.12728	.04261	-.04009	-.05059	.01392
CNF_PRN	-.04250	-.05459	.08409	-.07126	.05535	.03013	-.02178	-.02035
CNF_SPR	.01649	-.02288	.01177	-.18069	.01683	.00441	-.04652	-.00356
COMM_D	-.01658	-.00800	.01003	-.02400	-.02186	-.03351	.02018	.00642
COMM_S	-.05613	-.03148	.01926	-.04640	-.06427	.03412	-.01649	.01445
DGL_COM	.00601	-.03048	-.01671	.01948	-.00142	.01728	.06399	.02514
DGL_CON	-.00877	-.05580	-.01075	-.03617	.01431	-.00491	.04974	.01317
DGL_IMP	.01699	-.04913	-.03173	-.02802	.01061	.02244	.04266	.02434
GDWRK_D	-.05291	-.01389	-.05420	-.10723	-.02106	-.09661	.02530	-.05825
GDWRK_S	-.07258	-.06755	.02201	-.06023	-.06823	-.00187	.01168	-.00706
INFLU_B	-.03649	-.07298	-.07657	.04879	-.04047	.00767	-.09879	-.10194
INFLU_D	-.01738	-.00699	-.07055	-.04205	.05165	.02904	-.08333	-.11011
INFLU_S	-.04970	-.03800	-.05217	.03291	-.04519	.01195	-.05509	-.07495
PRF_EVL	.48444*	-.04708	-.04312	.00911	-.05720	.01515	-.08006	-.00645
PRF_RCG	.44251	.46847*	-.02833	.03555	-.01745	.00945	.01464	-.06738
PROF_DV	.30394	.30189	.52617*	.09390	.05988	.01289	-.21088	-.16099
SUP_AST	.23078	.32176	.06198	.62484*	-.05237	-.04207	-.02054	.02801
SUP_PRN	.56510	.50636	.15369	.32507	.77981*	.02088	.00519	-.02240
SUP_SPR	.10741	.22055	.10626	.63895	.10764	.76350*	-.05396	-.01889
WRK_ASG	.40994	.37902	.44964	.25997	.36109	.27105	.51971*	-.04642
WRK_DIS	.43839	.41169	.47025	.19266	.39395	.16499	.50097	.51550*

Table 7

Rotated Four Factor Matrix

Question	School connect factor	District connect factor	Goal congru-ence factor	Working condition factor
Principal Confidence	**.89839**	.10067	.03998	.03745
Principal Support	**.86930**	.11816	.05142	.08672
School Communication	**.84363**	.03833	.10620	.13323
District Work	**.82556**	.07259	.01712	.13395
Influence School	**.65011**	.12452	.17664	.37130
Performance Evaluation	**.60153**	.08130	.07223	.33282
Recognition	**.51115**	.17786	.29407	.29848
Influence Budget	**.49075**	.05323	.20160	**.46758**
Superintendent Support	-.01138	**.85482**	.14905	.10216
Superintendent Confidence	-.00966	**.85430**	.14046	.07272
Associate Confidence	.27108	**.71600**	.24028	-.05749
Associate Support	.26499	**.71571**	.20580	-.00503
Board Confidence	-.05064	**.63346**	.37720	.12807
School Work	.21447	**.52360**	.12160	.27375
District Communication	.19701	**.52253**	**.52103**	.11743
Influence District	.00738	**.47830**	.26916	.33407
Goals Communicated	.08487	.23985	**.86989**	.07459
Goals Implemented	.12315	**.40011**	**.76974**	.13807
Goals Consistent	.17101	.37826	**.71285**	.12367
Professional Development	.09605	.01823	.13137	**.70665**
Work Fair	.37368	.11345	.07507	**.59779**
Assignments Fair	.32332	.25556	-.02741	**.59086**

"working condition" factor.

Further examination of the questions included in the third and fourth factors led to the conclusion that the third factor was most closely associated with the district connected factor since the goals, philosophies and policies emanated from the board and the senior administration of the district. It was also determined that the fourth factor was most closely associated with the school connected factor since the assignment of work responsibilities, the distribution of work, and the responsibility for professional development of staff resided with the principal. To test this view, a two factor model was analyzed. Table 8 displays the factor matrix for the two factor model. The next step was to determine how adequately the model represents the data. Again, a reproduced correlation matrix, shown in Table 9, was examined. There were 83 (35.0%) residuals (above the diagonal) with absolute values greater than 0.05, and 65% residuals with absolute values less than, or equal to, 0.05. These statistics indicate that the two factor model represents the data well. The VARIMAX procedure was used to further clarify the data. The results, displayed in Table 10, identify that the questions associated with the third and fourth factors do load into the school connected and district connected factors as previously postulated. Values greater than 0.3 have been highlighted to aid interpretation.

Table 8

Two Factor Matrix

Question	Factor 1	Factor 2
Goals Implemented	.68455	-.39493
District Communication	.68402	-.33039
Goals Consistent	.67100	-.33089
Influence School	.66942	.39105
Associate Confidence	.65591	-.32438
Associate Support	.65574	-.30665
Principal Support	.64260	.54129
Recognition	.64147	.20683
Principal Confidence	.62768	.56704
School Communication	.62165	.55916
School Work	.59214	.55801
Goals Communicated	.59062	-.37508
Support Principal	.58272	-.54325
Influence Budget	.57779	.32938
District Work	.57775	-.14852
Superintendent Confidence	.56933	-.54410
Performance Evaluation	.55677	.41204
Board Confidence	.54032	-.51713
Work Fair	.53759	.19646
District Work	53330	28028
Influence District	.51259	-.30911
Professional Development	.37495	.14049

Table 9

Reproduced Correlation Matrix for Two Factors

Variable	CNF_ AST	CNF_ BRD	CNF_ PRN	CNF_ SPR	COMM_D	COMM_ S	DGL_ COM
CNF_AST	.53544*	-.09115	.03217	-.00729	-.04088	-.00235	-.10142
CNF_BRD	.52215	.55937*	.03950	.04200	-.06785	.01965	-.04795
CNF_PRN	.22776	.04591	.71552*	.07580	.00163	.02522	-.02145
CNF_SPR	.54992	.58899	.04882	.62018*	-.06632	.03046	-.21555
COMM_D	.55582	.54044	.24199	.56919	.57703*	.04858	.03891
COMM_S	.22636	.04673	.70726	.04968	.24048	.69911*	.01327
DGL_COM	.50906	.51309	.15803	.54034	.52791	.15743	.48952*
DGL_CON	.54745	.53367	.23354	.56205	.56830	.23211	.52041
DGL_IMP	.57704	.57406	.20567	.60456	.59866	.20466	.55238
GDWRK_D	.42713	.38898	.27842	.40974	.44426	.27611	.39694
GDWRK_S	.20738	.03138	.68809	.03351	.22067	.68012	.14043
INFLU_B	.27213	.14186	.54943	.14974	.28639	.54336	.21771
INFLU_D	.43648	.43681	.14647	.46002	.45275	.14581	.41869
INFLU_S	.31223	.15948	.64192	.16835	.32869	.63480	.24870
PRF_EVL	.23153	.08776	.58311	.09279	.24470	.57651	.17429
PRF_RCG	.35365	.23964	.51992	.25267	.37044	.51442	.30129
PROF_DV	.20036	.12994	.31501	.13703	.21006	.31164	.16876
SUP_AST	.52957	.51289	.23771	.54018	.54985	.23617	.50231
SUP_PRN	.24590	.06729	.71028	.07133	.26071	.70214	.17650
SUP_SPR	.55843	.59579	.05772	.62734	.57807	.05849	.54793
WRK_ASG	.28888	.18887	.44883	.19917	.30281	.44405	.24382
WRK_DIS	.25888	.14321	.49367	.15112	.27219	.48825	.20985

Table 9 (Continued)

Reproduced Correlation Matrix for Two Factors

Variable	DGL_ CON	DGL_ IMP	GDWRK_ D	GDWRK_ S	INFLU_ B	INFLU_ D	INFLU_ S
CNF_AST	-.08012	-.09888	-.04305	.02127	-.02931	-.13111	-.02491
CNF_BRD	-.06226	-.05258	-.05101	.02549	.00489	-.00920	.00871
CNF_PRN	.00007	-.00401	-.04229	.03331	-.11218	-.01988	-.06997
CNF_SPR	-.09679	-.11750	.05772	.05380	-.03055	-.04873	-.02724
COMM_D	-.03052	-.02466	-.01300	-.01146	-.02252	-.06519	-.02502
COMM_S	.00451	.01330	-.04354	.02773	-.08652	-.00968	-.04409
DGL_COM	.12275	.18389	-.07731	-.00146	.01159	-.08654	-.00126
DGL_CON	.55973*	.09736	-.04456	.00523	-.01056	-.06167	-.00749
DGL_IMP	.58994	.62445*	-.08083	-.00963	.02106	-.04999	-.01363
GDWRK_D	.43681	.45410	.35585*	.06400	-.02525	-.12216	-.04913
GDWRK_S	.21269	.18492	.25923	.66200*	-.09003	-.02469	-.07849
INFLU_B	.27871	.26538	.28490	.52593	.44233*	.03855	.05356
INFLU_D	.44623	.47292	.34206	.13104	.19436	.35830*	.07524
INFLU_S	.31979	.30374	.32868	.61460	.51558	.22226	.60104*
PRF_EVL	.23725	.21835	.26047	.55960	.45741	.15803	.53384
PRF_RCG	.36199	.35737	.33989	.49525	.43876	.26488	.51029
PROF_DV	.20511	.20115	.19576	.30041	.26291	.14877	.30593
SUP_AST	.54147	.56993	.42440	.21718	.27787	.43091	.31905
SUP_PRN	.25208	.22605	.29086	.68255	.54957	.16207	.64184
SUP_SPR	.57076	.61339	.41735	.04192	.15776	.46662	.17765
WRK_ASG	.29572	.29036	.28141	.42796	.37532	.21484	.43670
WRK_DIS	.26511	.25433	.26649	.47219	.40046	.18673	.46661

Table 9 (Continued)

Reproduced Correlation Matrix for Two Factors

Variable	PRF_ EVL	PRF_ RCG	PROF_ DV	SUP_ AST	SUP_ PRN	SUP_ SPR	WRK_ ASG	WRK_ DIS
CNF_AST	.00329	-.03756	-.07970	.26866	.02331	-.06376	-.05713	-.03522
CNF_BRD	.01934	-.02380	-.00020	-.12323	.03665	-.02450	-.02861	.02853
CNF_PRN	-.06166	-.07446	-.11108	.00919	.14324	.05802	-.13339	-.14151
CNF_SPR	.02169	-.06553	-.04077	-.08346	.05157	.13582	.00863	-.00736
COMM_D	-.02358	.00347	-.02015	-.04102	-.01259	-.07750	-.03029	-.02355
COMM_S	-.07004	-.03687	-.10255	-.01040	-.01149	.02823	-.10217	-.06659
DGL_COM	-.01007	.03235	-.00595	-.11003	-.02460	-.18932	-.07087	-.01589
DGL_CON	-.01976	-.01657	-.01150	-.11551	.00297	-.13539	-.04049	-.01767
DGL_IMP	.00680	-.00482	-.01507	-.12123	-.00955	-.12149	-.04516	.00175
GDWRK_ D	-.04191	-.03355	-.01040	-.07641	-.03362	-.02273	.10546	-.01241
GDWRK_S	-.08386	-.08290	-.10088	-.00384	-.01204	.02510	-.05212	-.08115
INFLU_B	-.02419	-.05258	.06552	-.02181	-.10622	-.03236	-.03109	-.01832
INFLU_D	-.00147	-.00417	.06154	-.07497	-.00468	.04544	.01647	-.01991
INFLU_S	-.04601	-.03107	-.00781	.00974	-.06589	-.00240	-.03523	-.04927
PRF_EVL	.47976*	-.04694	-.00583	.00114	-.07291	.02196	-.05039	.01952
PRF_RCG	.44237	.45426*	.00398	.00010	-.03525	-.03145	.00817	-.05576
PROF_DV	.26664	.26957	.16032*	-.04690	-.10342	-.02303	.00960	.06993
SUP_AST	.23874	.35721	.20279	.52403*	.01732	.04818	-.05285	-.04309
SUP_PRN	.58081	.52416	.31698	.25539	.70592*	.04812	-.08551	-.12286
SUP_SPR	.10060	.26144	.14217	.54870	.08040	.63468*	.01056	-.01241
WRK_AS G	.38026	.38548	.22917	.29227	.45180	.20654	.32760*	.11278
WRK_DIS	.41241	.40007	.23934	.26376	.49441	.15851	.34176	.36297*

Table 10

Rotated Two Factor Matrix

Questions	District connected factor	School connected factor
Superintendent Support	**.79642**	.01999
Superintendent Confidence	**.78745**	.01001
Goals Implemented	**.76524**	.19712
Board Confidence	**.74786**	.11896
District Communication	**.71974**	.24290
Goals Consistent	**.71080**	.23344
Associate Confidence	**.69547**	.22751
Goals Communicated	**.68433**	.14561
Associate Support	**.68293**	.24006
Influence District	**.58243**	.13810
District Work	**.51655**	.29838
Principal Confidence	.05128	**.84433**
Principal Support	.07996	**.83638**
School Communication	.05249	**.83448**
School Work	.03223	**.81300**
Influence School	.20429	**.74787**
Performance Evaluation	.10915	**.68400**
Influence Budget	.18202	**.63968**
Recognition	.31329	**.59675**
Work Fair	.18463	**.57348**
Assignments Fair	.24637	**.51663**
Professional Development	.16941	**.36280**

These two factors, identified as "district connected" (Factor 1) and "school connected" (Factor 2), were then used in the discriminant analysis procedure related to the principals.

The Principals

The discriminant analysis procedure distinguishes among mutually exclusive groups whose membership is known, and where it is intended to identify the variables that distinguish among the groups in order to develop a procedure for predicting group membership for new cases whose membership is not known. Procedurally, linear combinations of the independent variables, termed the predictor variables, are formed, which provide the basis for classifying new cases into one of the groups.

On the basis of the factor analysis of the 22 variables represented by the questions on the survey of staff attitudes, and utilizing yearly differences between the average percentage of positive responses for the questions related to school and district connection for the principal's staff, compared to the average percentage of positive responses for the district, it was determined for each school, and therefore each principal, whether, and the extent to which, they were above, or below, the district mean for those sets of questions classified as "school connected" and "district connected". A classification grid, shown in Table 11, was constructed in order to display the information for individual principals, and for groups of

Table 11

Classification Grid for School and District-Connected Factors

Group 2 -S+D	Group 3 +S+D
Group1 -S-D	Group 4 +S-D

principals. Group 1 principals were those whose average percentage of staff positive responses were below the district average percentage of positive responses for the sets of questions related to both school connection and district connection. Group 2 principals were those whose average percentage of staff positive responses were below the district average percentage of positive responses for the school connected set, and above the district average percentage for the district related set. Group 3 principals were those whose average percentage of staff positive responses were above the district average for both the school connected and district connected sets of questions. Group 4 principals were those whose average percentage of staff positive responses were above the district average percentage for the school related set, and below the district average percentage for the district related set of questions.

At this first stage, the known results for a sub-set of 154 principals, each with data for at least three years, was analyzed. The distribution of each principal's yearly staff results among the four

possible quadrants was determined, as were the standard deviations. From this total group, those with a minimum 70% distribution in one of the quadrants, and a standard deviation less than .340, were selected to comprise the groups whose membership was known. A total of 39 principals, or 25%, met these criteria. Their distribution among the quadrants is shown in Table 12.

Table 12

Distribution of Known Members of Groups

Group	Descriptor	Number of Principals	Percentage of Principals
1	-S-D	11	28
2	+S-D	7	18
3	+S+D	18	46
4	-S+D	3	8

The matrix in Table 13 was used as the input for the discriminant analysis program. The column headed GRP represents the grouping variables, and questions 1 through 22 are independent variables. The values of the variables (matrix elements) are the averages of the percentages of positive staff responses for the 39 principals.

Table 13

Input For Discriminant Analysis

GRP	PRIN.	COMM-D	WRK-ASG	DGL-COM	DGL-IMP	DGL-CON	CONF-AS	CNF-SPR
1	18	71.50	90.50	75.13	60.63	74.63	69.00	61.00
1	148	71.89	84.89	68.44	69.00	76.22	72.44	62.11
1	174	72.89	85.11	74.11	65.22	75.44	77.44	64.33
1	216	79.50	93.00	76.50	68.25	84.00	68.75	71.50
1	226	62.86	91.00	70.57	65.00	68.29	77.71	59.00
1	240	67.43	83.57	61.00	61.71	78.86	89.43	63.86
1	258	73.17	79.33	82.50	62.83	74.33	65.33	65.67
1	268	71.50	90.50	76.00	76.67	75.17	71.33	63.33
1	290	60.50	57.25	64.25	54.25	55.25	61.25	59.50
1	321	76.60	86.60	68.00	63.00	64.80	79.20	77.20
1	401	72.25	87.25	76.38	63.75	71.00	79.13	60.50
2	6	88.25	87.50	80.00	78.75	88.50	86.50	82.00
2	40	81.00	93.75	66.50	61.00	62.50	83.25	72.50
2	151	64.75	95.25	78.88	70.63	76.13	78.63	45.38
2	156	74.90	96.90	79.90	68.80	79.90	78.00	63.20
2	239	77.40	93.00	76.60	74.80	89.00	87.80	76.00
2	273	79.00	94.86	81.57	71.00	77.00	76.71	54.57
2	307	76.75	97.00	76.38	70.63	74.38	80.63	69.00
3	90	87.91	92.55	87.91	80.00	87.64	91.73	82.00
3	92	86.50	93.50	93.25	82.50	82.00	83.50	63.75
3	116	82.50	98.25	86.25	84.75	96.75	98.25	67.00
3	125	91.86	96.14	87.57	81.86	87.86	93.14	81.29
3	139	88.50	97.17	92.17	80.50	82.83	100.17	78.33
3	183	90.33	92.00	93.22	88.78	93.44	91.78	85.67
3	184	83.63	97.50	90.38	82.25	91.38	85.75	72.00
3	203	83.33	88.78	83.67	82.89	88.00	88.22	72.22
3	221	93.11	88.56	87.00	81.00	85.11	91.56	82.11
3	251	85.60	84.00	84.60	78.40	81.00	96.00	67.20
3	289	83.27	91.91	81.73	79.36	83.55	81.91	76.91
3	311	83.13	94.50	89.00	81.63	89.00	84.75	72.13
3	431	89.67	96.00	95.33	89.78	91.78	91.11	83.11
3	433	86.45	92.91	86.73	79.91	93.36	86.27	80.73
3	437	86.75	94.63	97.88	85.88	93.38	94.50	81.13
3	512	96.50	97.67	92.00	82.17	89.83	97.83	82.50
3	516	89.75	87.50	88.50	92.25	86.25	97.25	85.75
3	526	92.75	96.50	88.88	81.38	87.00	93.38	89.75
4	36	85.50	92.50	96.00	90.25	79.25	78.00	72.25
4	72	82.57	86.43	78.57	75.57	83.29	82.43	80.71
4	118	87.20	85.40	84.60	78.20	84.60	89.40	74.40

Table 13 (Continued)

Input For Discriminant Analysis

GRP	PRIN.	CNF-BRD	CNF-PRN	COMM-S	GDWRK-D	GDWRK-S	INFLU-D	INFLU-S
	18	46.88	85.50	86.00	96.50	92.25	21.29	65.14
1	148	48.44	94.33	88.44	93.22	94.11	25.89	77.56
1	174	48.89	94.11	86.11	94.56	94.78	26.38	70.75
1	216	52.75	92.75	84.50	95.50	93.75	22.00	68.50
1	226	46.43	84.57	77.14	95.71	92.86	21.29	60.43
1	240	45.00	96.43	90.00	92.71	94.29	15.67	84.17
1	258	59.50	82.50	68.17	91.50	86.83	23.17	62.00
1	268	50.33	95.17	87.00	96.50	96.83	21.00	68.00
1	290	40.00	51.25	63.75	89.75	65.25	5.00	26.25
1	321	58.00	90.00	85.00	92.40	92.20	19.75	74.25
1	401	52.25	86.38	89.63	92.00	94.63	18.86	62.00
2	6	41.50	88.75	94.75	97.75	99.00	21.50	77.75
2	40	50.75	95.25	89.75	100.25	100.00	24.25	86.75
2	151	51.50	96.75	94.25	91.88	98.88	20.25	86.88
2	156	49.50	99.60	98.90	96.00	99.60	25.22	89.33
2	239	55.40	96.20	82.00	97.00	93.20	27.00	78.80
2	273	56.29	97.00	93.86	96.57	99.00	26.29	73.86
2	307	56.63	92.00	97.75	93.13	98.25	27.50	85.88
3	90	73.55	91.82	87.45	97.45	93.82	41.10	81.70
3	92	45.75	96.75	94.50	100.00	100.00	33.00	83.75
3	116	53.50	100.00	100.00	100.25	100.00	39.75	92.25
3	125	67.57	94.71	91.29	97.00	95.00	30.14	87.71
3	139	68.00	94.67	91.17	97.17	100.00	40.50	90.33
3	183	68.67	92.67	88.67	98.78	91.89	43.22	84.00
3	184	68.63	98.00	90.75	97.88	97.88	37.25	88.38
3	203	64.67	95.67	99.00	93.78	97.89	33.44	86.33
3	221	58.78	95.11	96.67	97.33	98.44	34.25	82.38
3	251	60.20	98.80	100.00	98.00	97.40	28.20	83.80
3	289	61.36	91.27	92.64	97.45	95.27	36.09	80.73
3	311	68.63	91.75	92.50	97.63	96.63	35.63	86.75
3	431	79.00	96.11	94.00	98.00	96.67	43.56	88.56
3	433	63.64	98.82	96.18	98.73	99.73	28.20	85.10
3	437	66.25	93.25	91.13	97.88	98.13	25.88	84.88
3	512	84.50	98.67	96.50	99.00	97.67	50.60	85.40
3	516	62.25	100.25	100.00	100.00	100.25	23.25	90.50
3	526	57.25	98.38	95.13	98.50	98.50	25.57	78.00
4	36	56.25	82.75	80.25	96.25	89.50	32.00	65.75
4	72	60.57	91.14	84.86	97.14	91.14	32.17	62.83
4	118	64.80	90.60	88.80	96.60	96.40	36.80	70.20

Table 13 (Continued)

Input For Discriminant Analysis

GRP	PRIN.	INFLU-B	PRF-EVL	PROF-DV	WRK-DIS	SUP-AST	SUP-SPR	SUP-PRN	PRF-RCG
1	18	74.60	83.25	89.00	79.25	57.00	43.75	88.50	69.00
1	148	78.50	87.86	89.86	76.29	56.78	44.89	93.89	65.11
1	174	77.50	81.40	80.40	69.80	60.56	47.44	91.67	69.22
1	216	76.50	82.67	89.67	76.33	56.00	37.25	91.25	71.25
1	226	81.20	79.20	78.00	61.60	64.86	43.57	82.00	67.43
1	240	84.00	93.33	85.33	59.33	63.57	34.71	96.43	67.86
1	258	76.00	70.33	92.67	59.17	49.33	42.83	91.67	72.83
1	268	81.33	94.00	73.50	84.00	59.00	49.00	96.83	74.17
1	290	40.75	66.50	72.50	58.75	52.25	42.25	59.50	52.00
1	321	81.50	95.00	69.00	86.00	61.20	50.00	92.60	64.00
1	401	76.43	78.29	83.00	82.00	67.13	40.00	88.25	70.75
2	6	74.00	100.00	90.33	87.67	73.25	58.75	90.25	85.25
2	40	83.00	77.00	86.00	93.00	70.75	50.25	94.75	72.25
2	151	93.75	93.00	85.25	88.88	73.25	44.50	98.63	84.13
2	156	92.29	97.50	87.00	94.17	62.10	40.40	99.40	88.30
2	239	89.60	89.75	87.50	81.00	75.20	55.40	97.00	72.60
2	273	89.71	94.71	85.86	82.57	62.43	40.14	97.86	86.86
2	307	89.25	93.50	91.13	82.50	72.13	52.25	95.00	96.38
3	90	80.50	92.29	92.00	78.57	85.45	70.64	92.64	82.64
3	92	95.00	89.50	91.50	86.25	76.50	52.25	90.25	85.00
3	116	98.00	100.00	84.00	94.50	65.50	33.75	98.25	88.50
3	125	87.71	94.33	80.83	82.00	85.00	58.29	96.29	86.86
3	139	93.17	97.17	97.83	86.50	95.17	57.67	97.50	93.17
3	183	89.89	96.38	91.75	87.63	87.00	75.89	93.78	90.11
3	184	89.38	89.50	88.00	91.50	79.75	61.88	98.00	82.25
3	203	89.22	98.00	93.75	93.00	82.11	53.56	97.78	80.56
3	221	89.63	91.57	92.29	86.00	81.78	63.33	96.44	84.78
3	251	92.80	96.00	91.00	85.40	86.60	44.20	98.60	91.80
3	289	86.89	84.00	89.75	85.38	67.73	61.27	95.64	79.64
3	311	86.25	95.75	94.13	85.63	71.00	53.75	94.00	88.00
3	431	89.29	94.83	86.33	88.33	85.22	72.89	97.78	92.00
3	433	83.63	96.71	90.00	91.57	73.09	58.09	98.36	87.27
3	437	83.38	95.38	91.50	87.25	83.63	57.88	98.00	93.63
3	512	88.25	98.00	87.50	95.75	88.50	71.00	100.00	91.67
3	516	92.75	96.75	80.00	90.25	89.50	74.75	100.00	74.50
3	526	92.80	100.00	98.00	85.50	78.13	65.88	96.88	87.88
4	36	82.75	83.75	93.00	85.75	78.00	59.75	83.00	84.50
4	72	75.75	94.33	85.00	76.00	70.14	62.14	93.29	69.43
4	118	85.60	88.00	87.40	75.20	75.40	56.00	89.40	85.60

Based on the collection of independent variables the procedure distinguished among several mutually exclusive principal groups, i.e. principals that "belong" to groups 1, 2, 3, and 4. The available data were the values of the variable for principals whose quadrant membership was known through function GRP. These were the principals defined as the most "stable". The discriminant analysis methodology was also used to develop a procedure for predicting group membership for other principals whose group membership was not known.

In order to gain an initial picture of the nature of each of the groups, the average percentage of positive staff responses for each of the questions was calculated, as shown in Table 14.

Table 15 displays the results of the application of Wilks' Lambda (U-statistic) and univariate F-ratios with 3 and 35 degrees of freedom to each of the variables.

The small values for Wilks' Lambda indicate that the group means are different, and that the within groups variability is small compared to the total variability. That is, most of the total variability is attributable to differences between means of groups. In addition, each of the variables has a significance less than 0.05.

The results of the discriminant analysis calculations are shown in Table 16. The column "Actual Group" is the actual quadrant for each of the 39 principals. The column labeled "Predicted Group" is the most likely group for the case (principal) based on the discriminant analysis (the group with the larger probability). The

Table 14

Average Percentage of Positive Responses for Known Members of Groups

Question	Average percentage of positive responses			
	Group 1 -S-D	Group 2 +S-D	Group 3 +S+D	Group 4 -S+D
District Communication	70.9	77.4	87.9	85.1
Assignments Fair	84.5	94.0	93.3	88.1
Goals Communicated	72.1	77.1	89.2	86.4
Goals Implemented	64.6	70.8	83.1	81.3
Goals Consistent	72.5	78.2	88.3	82.4
Associate Confidence	73.7	81.6	91.5	83.3
Superintendent Confidence	64.4	66.1	78.0	75.8
Board Confidence	49.9	51.7	65.1	60.5
Principal Confidence	86.6	95.1	96.0	88.1
School Communication	82.3	93.0	94.3	84.6
District Work	93.7	96.1	98.0	96.7
School Work	90.7	98.3	97.5	92.3
Influence District	20.0	24.6	35.0	33.7
Influence School	65.4	82.7	85.6	66.3
Influence Budget	75.3	87.4	89.4	81.4
Performance Evaluation	82.9	92.2	94.8	88.7
Professional Development	82.1	87.6	90.0	88.5
Work Fair	72.0	87.1	87.8	79.0
Associate Support	58.9	69.9	81.2	74.5
Superintendent Support	43.2	48.8	60.4	59.3
Principal Support	88.4	96.1	96.7	88.6
Recognition	67.6	83.7	86.7	80.0

Table 15

Wilks' Lambda (U-statistic) and Univariate F-ratio

Question	Wilks' Lambda	F-ratio	Significance
District Communication	0.297	27.565	0.000
Assignments Fair	0.672	5.596	0.003
Goals Communicated	0.307	26.307	0.000
Goals Implemented	0.250	35.090	0.000
Goals Consistent	0.442	14.700	0.000
Associate Confidence	0.369	19.932	0.000
Superintendent Confidence	0.586	8.245	0.000
Board Confidence	0.491	12.079	0.000
Principal Confidence	0.730	4.304	0.011
School Communication	0.530	10.344	0.000
District Work	0.505	11.446	0.000
School Work	0.694	5.146	0.005
Influence District	0.432	15.364	0.000
Influence School	0.442	14.702	0.000
Influence Board	0.587	8.216	0.000
Performance Evaluation	0.607	7.550	0.001
Professional Development	0.721	4.505	0.009
Work Fair	0.472	13.060	0.000
Associate Support	0.310	25.948	0.000
Superintendent Support	0.532	10.263	0.000
Principal Support	0.691	5.211	0.004
Recognition	0.357	20.969	0.000

Table 16

Discriminant Analysis Results

Prin.	Actual Group	Predicted Group	Highest Probability P(G/D)	Second Predicted Group	Second Highest Probability P(G/D)
18	1	1	0.941	2	0.059
148	1	1	1.000	4	0.000
174	1	1	1.000	4	0.000
216	1	1	1.000	4	0.000
226	1	1	1.000	4	0.000
240	1	1	1.000	2	0.000
258	1	1	1.000	4	0.000
268	1	1	1.000	2	0.000
290	1	1	1.000	4	0.000
321	1	1	1.000	2	0.000
401	1	1	1.000	4	0.000
6	2	2	1.000	3	0.000
40	2	2	1.000	1	0.000
151	2	2	1.000	1	0.000
156	2	2	1.000	1	0.000
239	2	2	1.000	3	0.000
273	2	2	1.000	1	0.000
307	2	2	1.000	1	0.000
90	3	3	1.000	4	0.000
92	3	3	1.000	4	0.000
116	3	3	1.000	4	0.000
125	3	3	1.000	2	0.000
139	3	3	1.000	4	0.000
183	3	3	1.000	4	0.000
184	3	3	1.000	4	0.000
203	3	3	0.999	4	0.001

Table 16 (Continued)

Discriminant Analysis Results

Prin.	Actual Group	Predicted Group	Highest Probability P(G/D)	Second Predicted Group	Second Highest Probability P(G/D)
221	3	3	1.000	4	0.000
251	3	3	1.000	4	0.000
289	3	3	1.000	4	0.000
311	3	3	1.000	4	0.000
431	3	3	1.000	4	0.000
433	3	3	1.000	2	0.000
437	3	3	1.000	4	0.000
512	3	3	1.000	4	0.000
516	3	3	1.000	4	0.000
526	3	3	0.999	4	0.002
36	4	4	1.000	3	0.001
72	4	4	0.985	1	0.015
118	4	4	0.997	3	0.003

column P(G/D) is the calculated probability of belonging to the predicted group. The next two columns, "Second Predicted Group" and "Second P(G/D)" are the results of similar calculations for the next most probable group.

Examination of the discriminant analysis results shows that all cases have been classified correctly, that is, the columns "Actual Group" and "Predicted Group" match the known values for each of the principals. Column P(G/D) indicates that the probabilities for the predictions are high. In order to further test the model, the jack-knife procedure was applied. The results of the procedure are shown in Table 17. The successive removal of one of the cases, followed by a prediction of its proper placement, was accurate in three of the four cases.

At this point it was concluded that the discriminant analysis methodology proved to be a good predictor model using the pattern of the 39 most "stable" principals. The best results in predicting group membership would be achieved if survey results for a particular principal were available for at least three to four years. During the period 1981-1993, a total of 254 principals served in the 133 elementary schools that were in operation for at least some part of that period. Of that total, 154 principals contributed data covering at least three years, and of those, 60 contributed at least three years data in each of two different schools, with a further six contributing at least three years data in each of three different schools. The actual results for each of the principals serving in two schools

Table 17

Estimate of the Misclassification Rate for the Proposed Model

Case	One grouping value removed from Group 1		One grouping value removed from Group 2		One grouping value removed from Group 3		One grouping value removed from Group 4	
No.	Actual Group	Predic Group	Actual Group	Predic Group	Actual Group	Predic Group	Actual Group	Predic Group
1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1
7	UNGR PD	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1	1
11	1	1	1	1	1	1	1	1
12	2	2	2	2	2	2	2	2
13	2	2	2	2	2	2	2	2
14	2	2	UNGR PD	2	2	2	2	2
15	2	2	2	2	2	2	2	2
16	2	2	2	2	2	2	2	2
17	2	2	2	2	2	2	2	2
18	2	2	2	2	2	2	2	2
19	3	3	3	3	UNGR PD	3	3	3
20	3	3	3	3	3	3	3	3
21	3	3	3	3	3	3	3	3
22	3	3	3	3	3	3	3	3
23	3	3	3	3	3	3	3	3
24	3	3	3	3	3	3	3	3
25	3	3	3	3	3	3	3	3
26	3	3	3	3	3	3	3	3
27	3	3	3	3	3	3	3	3
28	3	3	3	3	3	3	3	3
29	3	3	3	3	3	3	3	3
30	3	3	3	3	3	3	3	3

Table 17 (Continued)

Estimate of the Misclassification Rate for the Proposed Model

Case	One grouping value removed from Group 1		One grouping value removed from Group 2		One grouping value removed from Group 3		One grouping value removed from Group 4	
No.	Actual Group	Predic Group	Actual Group	Predic Group	Actual Group	Predic Group	Actual Group	Predic Group
31	3	3	3	3	3	3	3	3
32	3	3	3	3	3	3	3	3
33	3	3	3	3	3	3	3	3
34	3	3	3	3	3	3	3	3
35	3	3	3	3	3	3	3	3
36	3	3	3	3	3	3	3	3
37	4	4	4	4	4	4	UNGR PD	3
38	4	4	4	4	4	4	4	4
39	4	4	4	4	4	4	4	4

was determined to identify the distribution across each of the groups, as shown in Table 18. The table also includes the distribution of the 39 principals comprising the known members of groups utilized in the discriminant analysis procedure, and the predicted results for the principals included in the discriminant analysis.

The results for the 57 principals who had a minimum of three years data in each of two schools were also examined to determine the proportion of years in one of six possible combinations of paired groups, or the further possibility that the yearly scores were distributed relatively evenly across each of the four groups. Principals were included in a paired combination if more than 70% of the scores were found within that pair.

Table 18

Percentage Distribution of Principals by Group

Group	Percentage of Principals			
	Predicted	All Principals	Defined Group	Two Schools
1(-S-D)	28	28	27	25
2(+S-D)	30	20	22	21
3(+S+D)	32	34	38	40
4(-S+D)	10	18	14	14

Table 19 displays the results of that distribution, including the percentage of principals in each group, and the mean number of years in the pair. Not included in the table are two principals who were exclusively in group three, both for six years in each of two schools.

Table 19

Percentage Distribution of Principals Serving in Two Schools by Paired Groups

	Paired Group						
	1,4	3,4	2,3	1,2	2,4	1,3	
	-S-D; -S+D	+S+D; -S+D	+S-D; +S+D	-S-D; +S-D	+S-D; -S+D;	-S-D; +S+D	Equal
N	3	13	13	7	0	9	12
%	5	22	22	12	-	15	20
Mean No. of Years in Pair	8.4	8.6	9.7	8.5	-	8.9	

CHAPTER 5

Summary, Conclusions, and Implications

Summary

The initial research problem, and related research questions provide the basic structure for this chapter. Summary findings are reported, appropriate conclusions are drawn, and implications for both further study and the operation of the district are identified. Which questions from the staff attitude survey provide the greatest measure of the impact of the principal's leadership?

The data presented in the study suggested that teachers' perceptions of the principal, including the confidence they expressed, and the support they received from the principal, resulted from their feelings about other factors associated with the school. The satisfaction of teachers with their influence in the school, including their influence over the school budget, the recognition they received for their performance, and with communication within the school, were highly correlated with their perceptions of confidence in, and support from, the principal.

The set of questions related to feelings of connection to the district were most highly influenced by reported confidence in, and support from, the superintendent. In those schools where satisfaction with the superintendent was higher, satisfaction with the board, the associate superintendent, and the set of questions related

to district goals was also higher. The results of the analysis of survey data have demonstrated that there were recognizable differences among the principals related to the perceptions of their staff. Since the principal was in a reporting relationship to the superintendent, through the associate superintendent, it is reasonable to suggest that the view that staff had of the superintendent was in some measure attributable to the principal. If the questions relating to the district are indeed a measure of the culture of the organization, then the responses to those questions are a measure of the success of the principal in establishing a commitment to the culture of the district among the staff in the school.

To what extent are there differences between the perceptions of teachers and principals about the school, and the school district?

The greatest differences between teachers' perceptions and those of the principals, except for one instance, were found for those questions that measure connection with the district. The one exception was the question of whether work responsibilities were fair and reasonable. Though this question loaded on the factor identified as "school connected", in the environment of the principal it probably is associated with the "district connected" factor.

The differences found are not unusual. Fiedler's concept of linking pin structures likely applies, with the principal being the link between the staff in the school, and the senior staff in the district. The greater degrees of satisfaction expressed by the principals with the associate superintendent, superintendent, board of trustees,

influence over district decisions, and communication, implementation, and consistency of district goals is the likely result of a greater personal association with those individuals, groups, and processes. Indeed, the district looks to the principals to communicate and implement those goals.

Although there were differences in the extent of satisfaction, the patterns of teacher and principal responses were similar in a number of fundamental areas. Two of the more significant were the influence that each of the groups perceived they had over district level decisions and school level decisions. The results found probably are typical for a large school district. It is worth noting that this school district, with a largely decentralized structure, places responsibility for more decisions at the school level than do most others in Alberta, and it is at the school level that staff feel the greatest influence. Those who would champion the value of decentralized systems would likely point to the survey results as evidence that the model is achieving the results that were originally intended. That is, the school-based management model is designed to give those working in the schools a greater influence over decisons that affect them and their job.

To what extent do some principals more often generate staff feelings of connection with the school than other principals?

Because the basic design of the study involved comparisons of average percentages for a school with average percentages for the district, there were, by definition, schools both above and below the

average. It is also clear that there were principals whose school results fluctuated around the mean, and were represented approximately equally in each of the groups. Table 19 identifies 20% of the principals with a roughly equal distribution of yearly results among the four groups. The table also identifies 22% of the principals with at least a 70% distribution in the pair of groups associated with feelings of school connection above the district average, and 5% of principals with at least a 70% distribution below the average. The data demonstrate that there was a group of principals whose staffs consistently reported greater levels of satisfaction with their school than did others.

To what extent do some principals more often generate staff feelings of connection with the district than other principals?

Again, the information in Table 19 provides the basis for the conclusion that 22% of the principals had staff results that placed them in the two groups that represent the district connected factor that was above the district average. The table also indicates that 12% of principals were consistently below the district average.

To what extent are there patterns of staff perceptions that would provide a basis for describing principals according to a predictable set of staff perceptions of school and district connection?

The results of the factor analysis established that the questions selected from the staff attitude survey produced two factors that could be used to predict the future perceptions of staff. The first included those questions that provided a measure of staff feelings of

being connected with the school district. The second consisted of a set of questions associated with feelings of connection with the school. Using those two factors, and a classification grid based upon positive and negative deviations from the district average, and following a tally of the actual results of principals, it was demonstrated that there were only two principals whose results were totally consistent over time. Each of those had six years of data in the grouping described as +S+D; one principal having served in one school, the other in two schools. All other principals had data that placed them in more than one group, ranging from what appeared to be an almost equal representation among the groups, to a pattern that was predominantly found in one group, with some minor representation in another. From the data presented in Tables 18 and 19, it is clear that both the tally of actual results, and the results of the discriminant analysis, establish patterns of results for particular principals that have endured over time.

Conclusions and Implications

This study set out to examine whether the previous perceptions of staff about the school and the school district could be used to predict future perceptions of staff.

Based on the data presented, there is strong evidence to suggest that such prediction is possible. The patterns of staff perceptions about the school and the school district do continue over time.

The possible implications for the district require a note of caution. Clearly, everyone cannot be above the mean. The author has not applied value judgments to the quality of work of principals, or their staff, according to their results. Based on personal experience, it is clear that many factors are involved in determining the attitudes of staff.

One of the advantages of a system that gathers perception data significant at the school level rather than only at the district level is that the right questions can be asked at the location where changes can be made.

The study was not designed to determine the cause for particular results. The research related to leadership outlines the many variables that need to be addressed in examining the interaction of principals and teachers. This study has demonstrated that, given the full range of interplay of these factors, there are a range of results, and those results are predictable. The author would assert that, unless there is a change in the quality and nature of the relationship between the principal and the staff, the current perceptions of staff about the school, and the school district, will continue. Those wishing to change the current pattern must first understand the factors that produced those results.

As stated at the outset, the district has used the results of the staff survey to monitor individual school results and district performance. Although information is displayed to show school and district trends, the information has neither been tracked by principal

nor analyzed to the extent done in this study. Principals probably were generally unaware of the perceptions of their staffs over a period of time, particularly as to how those perceptions compared to the perceptions of staff in other schools. Utilizing the methodology of this study, it is now possible to provide principals with historical information and analysis not previously available. To the extent that principals wish to either maintain, or change, the perceptions of staff, this information would be of benefit.

This study identified that there are differences among schools at the same level related to the extent to which the teaching staffs in those schools feel a connection with the school, and the school district. Given the extensive set of data available, further study of the factors that may contribute to the results, or which would more fully characterize the principals and the schools, would be warranted.

The first area of study would be determination of whether personal characteristics of principals, including age, gender, training, length of tenure, and leadership style are associated with particular patterns of staff attitudes towards the school and the district.

A second area of possible research activity would be determination of the extent to which characteristics of teachers, including age, gender, training, and length of tenure in a school predict attitudes of staff toward schools and the district.

And finally, the possible impact of student and parent variables, including socio-economic status, and the prevalence of special needs, may provide a greater understanding of the factors

that impact the attitudes of staff in the schools.

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APPENDIX

Staff Attitude Survey - 1993

1993 PRINCIPAL SURVEY

The board of trustees, the superintendent of schools and your administration would like to know your feelings about Edmonton Public Schools as a place to work. Please help us by completing this questionnaire, sealing it in the accompanying envelope and returning to the representative for your school or department. All responses are anonymous and confidential.

FOR EACH QUESTION BELOW PLACE AN "X" IN THE APPROPRIATE BOX ACCORDING TO HOW YOU FEEL ABOUT THE QUESTION.	VERY MUCH	FAIRLY MUCH	NOT VERY MUCH	VIRTUALLY NOT AT ALL
1. Do you feel there is good communication:				
(a) throughout the district?				
(b) in your school?				
2. Are you satisfied with the staff performance evaluation process in your school?				
3. Do you feel you as an individual have adequate influence over:				
(a) district level decisions that affect you and your job?				
(b) school level decisions that affect you and your job?				
4. Do you feel you get support when you need it from:				
(a) your associate superintendent?				
(b) the superintendent of schools?				
5. Do you feel you get adequate recognition and appreciation for your performance and accomplishments?				
6. Do you feel your assigned work responsibilities are fair and reasonable?				
7. Do you feel that the district is compensating you fairly?				
8. Do you feel that the district's goals, philosophies, and policies are:				
(a) communicated clearly?				
(b) implemented consistently?				
(c) consistent with your personal goals and beliefs?				
9. Do you have confidence in:				
(a) your associate superintendent?				
(b) the superintendent of schools?				
(c) the board of trustees?				
(d) Alberta Education?				
10. Does your associate superintendent provide effective leadership?				
11. Do you feel that the promotion of staff within the school district is fair and reasonable?				
12. Do you feel that the:				
(a) district is a good place to work?				
(b) school is a good place to work?				
13. Are you satisfied with your influence in the budget planning process?				
14. Do you feel that you have adequate opportunities for professional development?				
15. Are you satisfied with the quality of service from:				
(a) Communications and Community Relations?				
(b) Consulting Services?				
(c) Curriculum?				
(d) Facilities Services?				
(e) Financial Services?				
(f) Information Services?				
(g) Personnel Services?				
(h) Planning Services?				
16. Are you satisfied with the timeliness of service from:				
(a) Communications and Community Relations?				
(b) Consulting Services?				
(c) Curriculum?				
(d) Facilities Services?				
(e) Financial Services?				
(f) Information Services?				
(g) Personnel Services?				
(h) Planning Services?				
17. Do you feel that the workload in the school is distributed equitably and fairly among staff?				
18. Do you feel that the number of students in the classes that you teach is appropriate?				
19. Are you satisfied with the involvement at your school by:				
(a) parents?				
(b) non-parent community?				
20. Do you feel students receive sufficient information about:				
(a) what they are expected to learn?				
(b) what they have learned?				
(c) how they are expected to behave?				
21. Do you feel that sufficient information is provided to the parents about:				
(a) what their children are expected to learn?				
(b) what their children have learned?				
(c) how their children are expected to behave?				

PLEASE USE OTHER SIDE OF THIS QUESTIONNAIRE FOR COMMENTS

EDMONTON PUBLIC SCHOOLS